ESSAYS

ON

THE MEANS

OF

AVOIDING

HABITUAL SICKLINESS,

AND

PREMATURE MORTALITY.

ESSAY ELEVENTH.

Printed by MILLS, St. Augustine's, Bristol.

Experiments (begun in France) and repeated at intervals during the last twenty years, and now following up with due diligence, seem to promise the extinction of the power of febrile contagion. - - - At Manchester, regulations improved from former practices and a variety of projects, have been attended with the most complete success. The observation of the propagation of fevers for years together makes one wish for an INSTITUTION like that which has been found necessary to stop the progress of conflagrations.

Int. Lecture to an Anatom. course in 1797.

ESSAY

CONTAINING

REMARKS

ON

MISCELLANEOUS TOPICS

OF

PROPHYLACTIC MEDICINE.

NOTWITHSTANDING the discipline mankind receive from adversity, there is nothing they are so slow in learning, as how to portion out their feelings properly. By a fatal and almost incorrigible propensity, the fruit of a perverse method of instruction, they come to overlook what touches them nearly, but embrace what is remote with all the ardour of the soul. We are, most of us, by ignorance what the Scribes and Pharisees were by hypocrisy. If THEY *paid tithe in mint and anise and cummin, but omitted the weightier matters of the law,* WE are as assiduous about trifles and negligent in essentials, though the trifles that equally attract us and the essentials

we equally overlook, may happen in the lapse of ages, to have experienced the vicissitudes of fashion.

It may be shewn that this game of cross purposes is repeated in every part of life; but our infatuation of attachment is most conspicuous perhaps in the carelessnes with regard to some things touching health or existence, and in the superlative anxiety we discover with regard to others. In a population of three, four or five hundred thousand souls, it may be that a single individual is drowned under such circumstances as to be recoverable, if proper pains be taken to rekindle the vital spark. We do not harbour the same melancholy ideas with the ancient Greeks respecting the lot of those who perish without sepulture; and from the testimony of persons, who have been restored after various kinds of suffocation, there is nothing in this manner of dying which so very particularly calls for commiseration. Yet the infrequency of the accident has not prevented societies from being formed, in behalf of those whom it befals. These societies emphatically style themselves *humane*, as if the recovery of the drowned was among the grandest concerns of humanity. Prizes are established, and solemnities celebrated every year with great

pomp. The fine arts assist in adding a charm to the institution; and the attention of whole nations is summoned to the proceedings; and whole nations obey the summons.

Again, let but a suspicious dog make his appearance, and a hue and cry shall instantly pervade whole cities and provinces. The magistracy shall issue ordinances suitable to the emergency, and the members of the medical faculty, instructions how to proceed for the preservation of persons who have the misfortune to be bitten. Without doubt, hydrophobia is infinitely more to be deprecated than drowning. But there is nothing in the symptoms of hydrophobia that ought to impress us with much more horror than dropsy of the chest, and many other disorders that daily invade our neighbours and relations, though they hardly excite a sensation beyond the precincts of the bedchamber, which is the scene of the fearful spectacle. Nor is there above *one* of our countrymen *in a million*, I presume, that annually falls a victim to hydrophobia. Assuredly both for the improvement of the art of physic, and for the sake of the suffering parties, I think every thing ought to be done to restore suspended animation, and to prevent and cure hydro-

phobia. But when one looks to the alarm and the sedulous precautions, to which these accidents (the one infrequent, the other certainly not so much to be deprecated on account of any concomitant suffering), give rise, and to the supineness of society as to others equalling or exceeding them in severity and infinitely more common, is there not cause for the reproach—*these ought ye to have done, and not to leave the others undone?*

There is a time in the progress of all nations, when the regular succession of events in the material world passes without notice, and nothing has power over attention in the heavens above but an eclipse, or on the ground below, but an earth-quake. The united labours of wise men among us, have gone far towards correcting this propensity to childish wonder, and depriving the prodigies of inanimate nature of their exclusive privilege to interest. A few unquestionable facts will enable us to judge how far this may be the case in what concerns us still more nearly.

There is reason to believe that in the opulent city, near which I write, not much less than two thousand persons suffered, in a single year of the late scarcity, from pestilential contagion, with little or no medical assistance, and certainly without

occasioning any public measures, for relieving the distress they felt, or repelling the danger that threatened others.*

I had estimated the annual deaths from consumption in this island, at one hundred thousand. An intelligent writer has very lately calculated in the following manner. " If the importance of a disease be in pro-" portion to the mortality, there is none so " important in Great Britain and Ireland as " the pulmonary consumption. It appears " that not fewer than one fourth, or at least " one fifth of the deaths of the inhabitants " of London are occasioned by this malady; " that of 20,000 or 25.000, in the London " bills of mortality, annually from 4000 to " 5000 are in the class of consumptions. It " is allowed that these bills do not com-" prehend more than half of the present " inhabitants and that the whole number of " them is about one million. Therefore " 8000 to 10,000, perish annually here by " this disease. If England and Wales only " contain ten millions of persons, it follows " then that 80,000 to 100,000 fall yearly " victims to consumption." (*Medical and*

* See a letter from the author to the Mayor of Bristol, on this shocking subject, reprinted in the Monthly Magazine.

Surgical Review, November 1802, p. 278.). Such statements cannot too often be placed before the public eye, because they may be expected, at last, to bring the public to bestow most pains in guarding against those evils, from which they suffer most. An excellent institution has lately been planned in London for investigating the nature and cure of cancers. But of what consequence is such an institution, relatively to one that should have for its object to ascertain the frequency of consumption, to solve the local and personal queries suggested by this disease, and, by uniting the authority of a body of medical men, to set the whole country on its guard against the sources of danger.*

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* In the prospectus of the cancer institution, it is very properly observed that "it having pleased God that remedies "or methods of cure should be discovered for many diseases "that were once thought incurable, we ought to hope that "one may, at length be found out for CANCERS, and with "such hope, it is the duty of medical men to exert their facul-"ties for the investigation of the nature and cause of them, "and the discovery of some method or medicine, by which "they were not only to be relieved, but absolutely cured."

By parity of reasoning, it is equally the duty of medical men, individually and in combination, to exert their faculties and opportunities for investigating the nature and causes of consumption. Nor ought they to relax, as long as one general fact on the subject is in obscurity, nor till all who

To eradicate the barbarous tendency to care only for what is extraordinary, and, as far as may lie in the power of an individual, to bring feeling to a conformity with interest, I have devoted nearly the whole of the preceding essays to the elucidation of the bad consequences, resulting from the continuance of mischievous practices. And it would, I believe, make a very trifling difference in the bills of mortality or in the sum total of human misery, if we thought nothing of the events, however melancholy each singly may be, which come upon us through *the visitation of God,* provided we were emancipated from such personal misfortunes, as can be immediately traced up to our own ignorance or folly. If then, we must make the option, let us take heed to our habits, and leave casualties to shift for themselves.

There are some disorders, heretofore generally referred to the class of *incidental,* as if they were the products of the seasons or the

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are exposed to the disease, are in possession of the knowledge, by which they may be preserved. If any new spur is wanting to our exertions on the subject of cancers, by what argument, I wonder, can it be shewn to be less necessary in respect to consumption? Is it because for every one, destroyed by cancer, a hundred are destroyed by consumption?

effects of causes out of the reach of human prevention, which for their extensive prevalence would deserve not to be passed over in a work on preventive medicine. But the more they have been studied, the less have they been found entitled to be considered in this view. They have therefore a double claim to attention in the present series of tracts. One of the most frequent of these is the disease called

CHOLERA.

It has been before stated that the liver is apt to be dangerously affected by imprudent exposure to the sun in hot climates. The summer warmth of our own climate is observed to dispose the liver to throw out its bile in excessive quantity. In consequence a complaint is formed, which is observed by physicians to mark the decline of the hot season, as faithfully as the appearance of the swallow announces the spring: and it is a complaint, sudden and distressing enough in its progress, and dangerous enough in its issue to be worthy of general attention. Its most striking symptom is a violent and repeated evacuation of a bilious fluid both upwards and downwards. But as in all con-

siderable affections of the digestive organs, so in this, it is very little probable that the liver alone suffers. The stomach joins in an inordinate secretion of its juices, and has an impatience of its contents, which it would not shew in other circumstances, could the same materials be introduced without exciting disgust. The tract of intestines, situated below the point where the bile enters, are in the same irritable plight. No sooner are the one or the other touched by any of the bland warm liquids, which form a part of our ordinary diet, than the stomach is thrown into the action that occasions vehement vomiting, and the bowels into that, which attends purging. At the same time, the rapid manner in which the whole surface of these cavities secretes the liquids, that are proper to each, co-operates with the excitement of the liver, in exhausting the system.

When this complaint attacks in the most sudden and dangerous manner, formidable cramp in the stomach and cholicky pains are instantaneously felt, and there is a speedy puffing or enlargement of the belly, the skin of which is stretched like a drum. The patient is sensible of an extraordinary uneasiness or oppression in the pit of the stomach. The pulse becomes small, and often

extremely quick and irregular. The hands and feet grow as cold as ice. It is with the greatest difficulty they can be brought to their feeling by the application of heated bricks or similar contrivances. But the inside is proportionally hot, the stools and urine scalding. The evacuations in both directions go on without ceasing. There shall be a vomiting of bile with much straining every minute. The oppression, the nausea, the cramp and cholicky pains continue.

Under these violent symptoms, the strength declines with great rapidity. The pulse in a day's time comes to creep with a vermicular motion, instead of beating. The patient does not find a moment's repose. He has soon spasms in various external and internal parts. The sense of suffocation, that distressing sensation in the throat which just precedes vomiting, is here unusually severe. Swallowing is difficult or is totally impeded by a spasmodic contraction of the top of the œsophagus. The urine is suppressed. An unintermitting hiccup comes on, with a starting of the tendons or general convulsions. The patient falls into a state of unconsciousness and perishes as if from a stroke of apoplexy.

In weak people, without timely or proper

care, the pulse sinks early; spasms and faintings take place; the interior burns; the extremities feel stone-cold, which symptoms indicate an unfavourable issue.

Where the attack is so mild as to let the patient off with some hours' harrassing discharge of bile, and other painful accompaniments of this operation, and to leave him after a few days' exhaustion, it is severe enough to make any reasonable person take precautions against it. The precautions might be thought almost too simple to be named, if one did not regularly, every year, see a whole country down with sickness, for want of knowing or observing them; which is the more to regretted as they bring with them the most absolute security.

Tropical fevers are observed to seize particularly upon persons, newly arrived in the regions where it rages. In these diseases, an excessive stimulation of the liver and the allied organs seems to bear a considerable part. And it is probable that the susceptibility which living in a colder climate confers, may be removed by gradually lowering the diet, in approaching the tropical islands. It is certain that abstaining from intemperate indulgences at the close of our summer would soon occasion cholera to cease to be a general

disorder of that season. The stomach, it would seem, must in most cases be overloaded or offended before the irritation reaches the liver. In persons, particularly prone to an over-secretion of bile, sourness of the stomach will bring it on in more or less force, according to the susceptibility of the liver from the season or the constitution.

The stomach-complaints that plague children so much, and are accompanied by green stools, are among the examples of this position. Either by sympathy with the stomach, loaded with pap, biscuit, bread, or other fermentable materials, unfit for many young infants, or by actual contact between the soured mass and the mouth of the duct, a too great secretion of the gall follows; and acid eructations and purging afflict the little sufferer at the same time or in quick succession. So it is, in great measure, with more advanced patients, on a seizure of cholera, and indeed at other times with many, when the diseased affection of the digestive organs goes no farther than bilious vomiting. It is common enough for the first matter thrown up to be sufficiently acid to set the teeth on edge.

In the season of cholera, therefore, it is particularly expedient at breakfast to refrain

from laying much ascescent food upon the stomach. Those who have power enough over their habits to refrain from sugared tea, would do well to use a mixture of milk and soda-water or lime-water, with a sparing portion of bread.

The temptation of fruit after dinner is now particularly dangerous. Attacks of cholera arise from no cause more commonly than from a monstrous mixture of meat, bread, fruit and wine at dinner.

Things offensive in quantity as well as quality produce the same sort of evil. Vegetables to which the stomach has not been habituated, those generally less digestible, as cucumbers, or those unsuitable to particular constitutions, as onions frequently are, rich sauces eaten in profusion, and that almost indigestible material,. old, decayed cheese, are very frequently in fault.

The contrast of temperature between the noons and nights of autumn, often brings into action that susceptibility of over-stimulation, which appears to be generated by the summer-heats. Hence it is so common to find a certain degree of imprudence in regimen, after wetting the feet, or exposure to the evening damps, followed by cholera, though a greater has been committed under

different circumstances with impunity. In winter both causes shall conspire without being followed by *this* bad consequence.

When oppression and distension of the stomach have come on, and there is reason from past experience or present feelings to suppose acidity, the mischief may often be stifled in its birth by draughts of alkaline water, by magnesia or other absorbent substances. But, in this case, great abstemiousness should be observed for many hours after—indeed absolute fasting, if the party be robust; otherwise small supplies of food may be taken at intervals.

When the bilious vomiting or purging has come on with the internal heat, warm liquors as tea or water gruel, do but increase the evil. Till medical assistance be obtained, small and frequent draughts of cold water, or lemonade, or nitrous acid sufficiently diluted, will alleviate the symptoms. These liquids too have the advantage of allaying the harrassing thirst and clamminess of mouth.

Another thing too, which may be innocently practised, and which therefore should never be omitted to break the force of the attack, is to warm the extremities, if cold. It is not enough to expose the chilled parts, merely to warmth, but they should be

vigorously rubbed, and without too great tenderness for the invalid's feelings. It appears that the action, excited in the skin in this way, is in this case, as in others, much more beneficial than that which mere heat produces as usually applied.

FAINTNESS, FEVERISHNESS.

As during the peculiar susceptibility of one set of organs, dangerous or fatal attacks are thus liable to be incurred and thus easy to be avoided, so in all states of the system, and particularly in weak people, do very obvious oversights occasion the inconveniencies, named at the head of this section. Fatigue from travelling, or from long efforts of attention, especially with fasting, is one of the conditions under which they are most apt to occur. The fatal effects of too liberally feeding a person, who has remained without victuals for whole days and nights together, are very generally understood. But this is only an extreme case of the same kind. Persons, whose sensibility is too great and their muscular force too small, on coming off a journey into a warm room, or on taking too much food or liquids too

stimulating, will immediately fall into a swoon. It is a law of the animal œconomy that the substances which, in a certain portion, but just create a more vigorous feeling of existence, will in an increased dose induce feverishness or instantaneous diminution or suspension of the vital powers or death itself. Drinking—in different quantities from a glass of rum or brandy diluted to a whole bottle pure—will produce these several degrees of affection. So also will applying solutions of opium of various strength to the inside of the heart of a frog, make it contract with more apparent vigour, or destroy its contractility in the twinkling of an eye. But the operation of these powers is in proportion to the capacity of the subject, to whom they are applied. A patient, weakened by much confinement, from fever for example, shall find the free air reviving. To another patient, weakened by long continuance of sea scurvy, the same shall be a deadly poison; if that term may be applied to a substance that kills on being respired. Therefore of a mixed party of people, who have travelled an equal distance and fasted for the same space of time, a warm room and a good dinner shall produce downright fainting in some of the females, and only

oppression or physical anxiety in the others, and violent flushing of the face with general heat in stout men. Fainting depends on the contractile powers of the heart and arteries being either greatly impaired or altogether destroyed for a time. Flushing and general heat and the quick and bounding pulse, which may always, on such occasions, be detected on examination, evidently depend on the very opposite states of the whole or a part of the same organs. Both the one, therefore, and the other, may be avoided by attending to two things. It follows, in the first place, that we should be cautious, in proportion to the readiness with which our organs may be overpowered by ordinary or extraordinary agents, of suffering them to fall into a state of exhaustion. Hence the propriety of the rule, of late so frequently repeated by medical writers, not to fast too long in a state of convalescence or of debility from any cause whatever. Hence we see how it happens that people, impaired by too free use of wine, or by any species of debauchery, are often so extremely injured by the sports of the field. The consequence of many a fox-chase must be greater liability to an attack of gout in the stomach, or at least, great increase of indigestion where that

troublesome affection has taken place. Sports of less severity are injurious to country gentlemen, as country gentlemen now frequently are even at the age of thirty. I shall say nothing of the injury from the heat from riding full speed, with chills between the acts of the chace.* It is sufficient to observe that between inanition and exertion, the system is too much lowered at one time of the day, as if by way of preparation for being forced the more readily into as inordinate action by the carousal of the succeeding part. Hence, with some, life is a sort of quotidian ague. They have their long cold fit in the morning; and the long hot fit in the evening and through much of the night: and as an ague, strictly so called, if it hang on, will impair digestion and disorganize the liver, or otherwise undermine the constitution, just so will the above-described sporting ague. The mode of prevention results from the mere description of the complaint. I am told indeed that some of our Nimrods upon

* There are doubtless or there have been races of men to whom these chills and heats were as nothing, or perhaps wholesome variations. But I am to speak of my contemporaries, or, at least, of a part of my contemporaries. They are not made of such well-tempered metal. Nor has their nature that range of endurance.

the wane have felt out for themselves the propriety of carrying a sandwich into the field.—The same ought to be done even by many of those whom we hear most loudly proclaiming the power of their stomach to stand the longest blockade from hunger. For their countenance and their own confessions if they are properly interrogated, and their whole habit, so flatly contradict the boast, that if the terms were not injurious, one might apply to them what Mr. POPE says of a well-known structure—

> Where London's column, pointing to the skies,
> Like a tall bully, lifts the head and lies.

There is yet another simple observance which I would strongly recommend; and that is, when the hounds are at fault and the hunters find themselves heated by exertion, to dismount and walk till the scent is recovered; as also, at the close of the chace, to provide for some additional cloathing, while their jaded steed bears them homewards as slowly as foot can fall. Indeed, earlier in the day, more cloathing would be frequently expedient. It is in vain for a man to vote himself hardy. Partaking in a diversion which requires hardihood will not confer that quality; as seems to be sometimes supposed.

How bitterly do physicians see men, who vainly presume upon their power to resist the cold and damp of our winter atmosphere, rue their error.

If, on some occasions in life, it is nearly impossible to help being put into the condition of too great susceptibility, we may still be able to escape the operation of too powerful agents. This therefore is the second thing to be held in view. Large fires, high dishes, even a full meal, wine and tea, will then induce in many people, a temporary fever. The delicate, and even the robust, will often be more refreshed, after fatigue, by a sparing portion of cold meat and a glass of plain water than by any of the seemingly more efficacious restoratives. One of the most eminent and able members of the surgical profession, lately mentioned to me an instance strongly in point. After attendance on a remarkably long trial in a crouded court of justice, he went to rest on a little bread and water. A great number of those who had been present on the same occasion, gave way to the eager call of their appetite: and to his certain knowledge he almost alone of his comrades arose refreshed and alert. A large proportion of the rest were all tormented with restlessnesss and debilitating heats. Some became seriously indisposed.

FEBRILE CONTAGIOUS DISEASES.

Whatever may be the extent to which treatises on fevers, comprehending the description and treatment, the varieties produced by climate and other topics generally run, the surest rules of prevention in our own country, with the reasons of those rules, will go into a narrow compass. The researches of the moderns have done much towards illustrating this part of medicine: and the better a doctrine is understood, the more concisely can it almost always be delivered.

The first position has long been established beyond controversy, though physicians are far from being agreed concerning the exact bounds to which it extends. *Certain disorders and fevers among others, are communicated by actual contact of the person labouring under them, and even by a near approach without actual contact.* This has always been a matter of fatal experience in the febrile disorders of our climate. Every body has seen how catching the measles are. Some parents have voluntarily exposed their children to the society of persons, infected with the small-pox; and the result has justified the principle,

whatever may be thought of this method of following it up into practice. A single visit, where any of the proper precautions are neglected, has sometimes been sufficient to infect physicians with the scarlet and low nervous fever. Medical practitioners, accustomed to visit the poor in their habitations, where *all* the proper precautions are apt to be neglected, have frequently fallen victims to febrile contagion. In this way, as I have been credibly informed, two young physicians of great promise have been cut off, within a short period, in the single town of Limerick in Ireland. "In Dr. HAYGARTH's letter," says Dr. STANGER, "nine physicians to hospitals "in London are enumerated, who have died "of contagious fevers. Out of the faculty "at large a greater number perish there "*annually* by this dreadful distemper." Some curious incidents shew that, other circumstances being alike, the infection will be in proportion to the nearness of approach. Thus it is stated by Dr. FENWICK, in a letter to Dr. CLARK of Newcastle upon Tyne, (who has lately exerted himself to promote an establishment for the recovery of poor fever-patients in that town, in a manner that will probably be beneficial to the kingdom at

large,*) "that a beautiful girl being brought "into the clinical ward of the hospital at "Edinburgh, ill of typhus fever, some of "the pupils were particularly attentive to "her, and used to sit on her bed or loll on "her pillow. The consequence of which "was three of them were infected with the "fever."

That the power of contagion to infect extends but a little way from the patient, in whom it is generated, when he is confined where the air has free entrance and egress, is now evinced by a vast multiplicity of observations on all the diseases that are propagated by contagion. The terrors of mankind have, in all ages disposed them to imagine that the whole atmosphere was pregnant with the seeds of the reigning malady, whatever might be its nature. Thus, it appears from the earlier treatises on that complaint, which America seems unjustly accused of having transmitted to Europe, that its exciting cause was believed to be disseminated through the surrounding medium; and, as by a scarcely

* In his *collection of papers, intended to promote an institution,* &c. and the *appendix.* Newcastle, 1802. This is the most ample collection of testimonies ever brought together. I quote it freely, lest it should not be given to the public.

credible backwardness in the art of observing, the real method of its propagation continued long unascertained, it was held as no disgrace for nuns and popes to be sufferers from it. No wonder then, when the offending material is cognizable by none of the senses, and where, as is the case in some situations, it really passes from one person to another at a distance, that the same terrifying persuasion should have been harboured. The security derived to the Europeans in the Levant, from the practice of *shutting up* at the time of the prevalence of the plague failed for a long time to open our eyes to the grossness of this delusion. By degrees, the close attention, which practitioners of medicine have learned to pay to the phænomena, led them to perceive enough of the process of nature to dissipate the distressing apprehensions, transmitted to them from their forefathers. The more diligently the subject was investigated, the more confirmations were obtained of the narrow range of contagion. And now, almost every physician of an hospital and surgeon of a ship, emboldened to exert his faculties by the conviction that it is easy to keep clear of the contagious atmosphere, is able to adduce demonstrative facts.

Respecting the plague itself, Dr. GREGORY,

the present professor of the practice of physic at Edinburgh, has lately furnished the following particulars.* He was informed, he says, by the Rev. Mr. CARLYLE, Arabic professor at Cambridge, who has resided at Constantinople, and had many opportunities of observing the plague, that it has scarcely ever been known to pass the narrowest streets and alleys—probably such as are not ten feet wide; and that people are safe in their own houses, while it rages in the opposite, owing to the diffusion of the effluvia in much air. Dr. RUSSEL prescribed from a window for patients, ill of the plague in the street below him at four feet distance, without receiving the smallest detriment, though on account of the tendency of the effluvia to ascend in the air, rarified by the heat of patient's bodies, that was the most dangerous position. But the second observation, communicated by Dr. GREGORY, is still more in point. Mr. TAINSH, late surgeon of the Theseus, when off the coast of Syria, in 1799, received on board Captain PHILIPPEAUX and four seamen, ill of the plague. The captain was placed in a cabbin by himself. He rejected all medicines and died on the fourth day.

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* Report of the Newcastle-upon-Tyne Committee. p. 4.

For the other four, Mr. Tainsh fitted up a birth, apart from the crew (consisting of upwards of 500 men), but with no better partition than painted canvas. He kept his four patients as cool and as clean as possible. One only died. But the crew totally escaped the infection, which but for so simple a precaution, would, as Dr. Gregory observes, in all probability have destroyed one half of them.

Observations on the small-pox, which certainly ranks among our own most contagious disorders, will equally serve to demonstrate that the same security attends the same precautions, and that the contagion of this complaint does not fill the atmosphere even of a 64 gun-ship. On Christmas day, 1759, the Panther sailed for India with a crew of 420 men. Scarce had they lost sight of English land, when a feverish complaint appeared on board. It proved to be the small-pox. Within three days, 16 or 17 of the hands were attacked. Immediately on the appearance of the eruption, an enquiry was made, and it was discovered that less than half the crew, namely 193, had had the small-pox. The ventilators were kept at work from this time, night and day. Fresh air was allowed to pass through the ship

wherever admittance for it could be found. Fumigations were performed and the boy well washed with vinegar twice a week. Canvas was nailed up to divide the healthy from the sick, and wetted with vinegar. The seamen liable to the infection, slept in part upon the poop under an awning, and partly in other places as remote as possible from the infected.

By these simple means was contagion rendered perfectly inert; nor was a single additional person infected during the voyage. (*Dr. Clarke's appendix*, p. 25.)

A forcible proof of the circumscribed sphere of contagion, is deducible from the history of hospitals, in which there are distinct wards or rooms for the reception of patients, who apply for admission, when ill of contagious fever. Dr. JAMES HAMILTON, physician to the Edinburgh hospital, attests that since the appointment of separate wards for persons, labouring under fever, the communication of infection from those wards is unknown to him. The arrangement is of many years standing, and Dr. HAMILTON practised in the hospital before and since. (*Collection* p. 90.) Dr. RUTHERFORD adds that when low fevers infect the other parts of the hospital, they have not originated there, but been introduced. (*ib.* p. 91.) An

hospital was opened December 16th 1801, for the 4th regiment of dragoons, at Newcastle-upon-Tyne, at a time when a typhus fever of a very bad kind prevailed among the soldiers. One good, airy room was set apart for fevers. The stair-case only separated this room from the entrance into the other wards, which were completely full. There have been, at one time, six patients extremely ill of typhus, and yet to the date of the report—July 1st, 1802—not one patient in the other wards was seized with any symptom of fever. (p. 111.) The work-house at Liverpool, in its general history, adds the greatest weight to the above position, while some particular fatal accidents demonstrate the danger of neglecting the due precautions. This building is so large as to have contained 1400 persons. Its fever-wards are situated in the third story: and in the next above is the nursery. The same stairs lead to both. A number of children are constantly playing upon these stairs and about the doors of the wards. Dr. CURRIE had the curiosity to follow a patient up into the ward. He counted exactly 83 children on the stairs. There was not one, by whom the patient did not pass within 3 or 4 feet; and to some he passed much nearer. When the circumstance

was mentioned to the nurses, they semed to think it nothing uncommon; and the want of any actual proof or appearance of harm from the use of a common stair-case, with the prospect of a separate house for fever, rendered fruitless several consultations, respecting a distinct stair-case to the fever-wards.

The nurses live in these wards night and day, their apartment being in the centre between them, and open at top to the air of both. Several have caught the contagion at different times; but these have been nurses newly introduced; and they have seldom been affected above once; their constitutions acquiring, by habit, insensibility to the contagious impressions. Two of the present nurses have, each of them, a child living with them in this infected region, and going out to school by day. These children appear healthy, though they constantly sleep between the patients in either ward. Their mothers were satisfied that they were liable to no injury, as they never came into contact with the sick. They seemed to think that they should be themselves perfectly safe, were they not obliged to handle the sick, and immediately exposed to the contagious exhalations from their skin and lungs.

"Whatever," says Dr. Currie, to his

correspondent, " may be your sentiments, " respecting the narrowness of the sphere of " contagion, you would not, I think, have " ventured to predict so singular an exemp- " tion from fever, under such circumstances." For in the lock hospital, which is situated immediately below the fever-wards, there has been no fever since this disposition was adopted; that is, during ten years. Two years ago a very alarming fever broke out, and infected no less than 67 children. Luckily the source of the infection was clearly discovered; and the explanation not only clears away all doubt as to the inference deducible from the rest of the account, but furnishes an analogy which will extend to similar cases, where the origin of contagion, appearing on one or two occasions in situations generally exempt, remains in obscurity. " A " family" says Dr. Bostock, " residing in " a cellar in one of the most confined parts " of the town, was sent in a state of fever " to the workhouse. The parents were placed " in the (fever) wards. But, by some ne- " glect, the children were sent into the " nursery, with some degree of the disease " upon them, and without removing the " infected clothes, which they had worn " before they came into the house."

Three other persons, (the master and mistress, and a young woman,) died of low fever in 1801. The young woman had, as it appeared on enquiry, been incautiously turning over the linen from the fever-wards before it had been steeped in water. The two other fatal accidents are thus accounted for.—The apartments of the master and mistress are so near the passage, at which all persons enter the workhouse, that the door of a coach, as it brings up a patient ill of fever, must open within a foot or two of the window. In 1801, typhus being extremely prevalent, "there was an unusual pressure for admit-"tance into the fever-wards. They were "filled beyond all former precedent, and "many were obliged to be sent away. The "examination of these unhappy persons in "their unclean and contagious state, un-"washed and unventilated, and the rejection "of them, where necessary, devolved on the "master and mistress—attentive and humane "persons—who doubtless fell victims to this "dangerous and painful duty. This is the "opinion of their successors, who make a "point of never approaching within a yard "or two of suspected fevers, and have "hitherto escaped. The porter, who has

"opened and shut the passage-gate for "several years has escaped also. He says "he has used the same precaution, but he "ascribes much of his safety to tobacco, "which he chews in very large quantities." (*ibid.* ps. 173—186.)

It is affirmed by Dr. CURRIE of Chester, that from the time of the opening of the fever-wards of the infirmary in that city, there never was, at any one time, reason to suspect the communication of contagion to patients in other parts of the house (*ibid.* p. 238); in this he is supported by Dr. HAYGARTH, who extends the term to nineteen years.

The preceding facts are corroborated by similar testimonies from a large proportion of the physicians in the kingdom, most conversant with febrile infection. Insomuch that the medical opposers of the fever-house, proposed to be placed near the Newcastle infirmary, "had it not in their power to "produce the authority of one modern physician of reputation in support of their "opinions." (Dr. CLARK, *Appendix*, p. 2.)

No considerate reader will require to have the cogency of such evidence pointed out to him at large. When he remembers that thousands of persons have lived under the

same roof in different hospitals with patients, ill of fever, it will strike him as impossible that the influence of contagion should not have reached them, if it extend so far as from one apartment to another adjacent. And yet among a number of medical practitioners, intent upon this very subject, no one has observed an instance of the kind, where proper measures were pursued. The few straggling instances, and these for the most part loosely reported, which seem to indicate the distant action of contagion, cannot be allowed to outweigh the vast mass of opposite evidence. For if it be difficult to prevent the introduction of gross prohibited wares into a territory, must it not be nearly impossible to guard all the abodes of the healthy and sick against a material too subtle to be an object of any of our senses, and at the same time so transportable, that it may be conveyed from place to place on the skirt of a coat, in a rag, a bit of lint, or a lock of wool! "Men" says Dr. FENWICK, "are "often exposed to the near action of con-"tagion without its being discovered; and if, "under these circumstances, they are seized "with fever, the disease may be readily at-"tributed to some more distant exposure, of "which they have been aware. I cannot illus-

" trate my meaning better than by a case,
" which Mr. INGHAM read to the Special
" Court on the 24th of June last. That gen-
" tleman informed the governors (of the New-
" castle Infirmary), that a person had caught
" a fever by speaking to his servant (who had
" lately recovered from one) in the open
" air. A further enquiry has proved that
" the person alluded to had been engaged in
" a small room in paying several workmen,
" many of whom resided in *Pipewellgate*—
" where, at that time, a low fever was pre-
" valent. In the same manner, where con-
" tagion has been supposed to be conveyed
" from one ship to another at a distance, a
" full knowledge of all the circumstances
" would probably shew that a more intimate
" communication had taken place than that
" which has been noticed. No attention or
" sagacity can, at all times, detect such
" mistakes, and it is therefore no impeach-
" ment of the veracity or judgment of the
" gentlemen, who give us these supposed
" proofs, to consider them as inconclusive."
Where therefore the examples are so rare as those of apparent infection from remote sources, no cautious reasoner would acquiesce in an affirmative conclusion, if there were no evidence on the other side. But when in

trials upon a large scale, and continued for years, contagion shews no power to strike far off, it follows that it can have no such power.

Of a truth, so essential to the consolation and security of society, there yet remain proofs, if possible, stronger still. Thus at St. Thomas's hospital in London, fever-patients are indiscriminately mixed with others, but the wards are kept as sweet as the apartments of a private house. Here, says Dr. BLANE, " there was no instance, " during the last ten years of my attendance, " of any medical gentleman, patient or nurse " having caught a fever—This was not the " case before proper means of cleanliness " and ventilation were adopted." *(appendix p. 45.)* In another place, the same physician relates that when infectious fevers occur in private families he constantly assures the family without having been once mistaken, that if perfect cleanliness and sweet air be maintained, there is no occasion to fear infection. *(Collection p. 102.)* Dr. WILLAN remarks that it is well ascertained by experience in many places that if there be no close intercourse, the most malignant fever may subsist in one chamber of a house without affecting any inhabitant of the other apartments—an observation he has made a

thousand times in the metropolis. *(ib.* p. 104.) Dr. JOHN HUNTER asserts that "in several of the worst cases he has seen (some of which proved fatal) where the patients, being in better circumstances, were lodged in clean airy apartments, he has never known an instance of their infecting those about them; even when the patient was a married man, and his wife had slept in the same bed with him one or two nights after the commencement of the fever. In an hospital, in a ward of which there are patients, ill of this fever, provided it be well ventilated, the patients with other complaints, in the same ward, are seldom infected. It would appear that there is no great power of infection in the body *alone,* provided the air be not confined. The worst mode in which the poison can be applied seems to be by the apparel or bed-clothes of the sick. *(ib.* p. 234.)

DESGENETTES *(Hist. med. de l'armee d'orient.)* mentions a woman who, without detriment, travelled sixty leagues behind the carriage of the general in chief, between two patients ill of the plague.

" Among the middle and higher ranks of
" society in Chester and its neighbourhood,
" during a period of 31 years, I scarcely recol-
" lect a single instance of the typhus fever

" being communicated to a second person—
" not even during the epidemics of 1783 and
" 1786. Fresh air and cleanliness were the
" only means employed to prevent infection.
(Haygarth's Letter to Percival.)

In a question of so great moment and of which the solution depends upon testimony, it appeared necessary to the satisfaction of the reader to bring forward a variety of witnesses. But these may suffice, when it is added that there is either a general concurrence or no contradiction, except on the part of a few opposers of the establishment of fever-wards, who have scarce succeeded in collecting any thing specious, and adduce still less from their own experience.

The reader may desire to know more precisely still the limits of contagion in ventilated places. But here we must be content with approximations. In the worst species, we may confidently believe that it does not extend a yard. Dr. C. à MERTENS physician to the foundling-hospital at Moscow, whose account of the plague in that city, I offered in vain when a student of medicine, to two London booksellers, in an English dress,* estimates the infecting distance

* It has lately, I think been translated again, and published,

of patients in the plague at a foot or under, and is most fully aware that the contagion does not reside in the air.* Dr. O'RYAN's interesting experiments shew that neither the matter of small-pox, nor a person in the eruptive fever of small-pox infect at the distance of half a yard.‡ Dr. HAYGARTH'S

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unless the translation happens to be that left by me in the hands of the late Mr. MURRAY, of Fleet-street.

* *Sola ægrotorum et rerum infectarum contactu communicabatur; atque atmosphera contagium non spargebat, sed sanissima semper fuit. Visitando tam prope adstabamus illis ut sola pedis distantia inter nos et eos sæpe vix remaneret et absque alia quâcunque cautela quam quod nec corpus nec vestes aut lectum tangeremus, a peste immunes permanserimus. Linguam propius observando, solebam linteum aceto communi imbutum naribus et ore admovere. (Observ. Vindobonæ.* 1778.) In a faithful history of modern attempts to ascertain the circumstances under which contagion is communicated, and to prevent infection, this physician would deserve an honourable place. Our late publications sometimes shew want of information, or a very narrow spirit of nationality.

‡ I impregnated with small-pox matter, a large ball of cotton, and placed it in the middle of an oval table, whose smaller diameter was a yard. I placed six children round the table, so that there was only half a yard distance from each of them to the infected cotton. Not one was infected on several trials. (*Dissertations sur les fiévres infecticuses.*) The experiment was repeated often within doors and without on the communication of the small-pox. The blood, mucus and tears of persons ill of measles, were similarly tried with the same result.

observations pretty nearly coincide with this result.* Dr. CURRIE supposes that contagion, issuing from a person in low fever, may not infect at more than the distance of a few inches in free air.

The history of the communication of contagion in opposite circumstances is exactly the reverse. It is in the confined and filthy habitations of the poor, that the matter which excites low, putrid, nervous fever, is generated; and there, for want of free admission of the air, it is so certainly communicated, that wherever one inhabitant sickens, others catch the disease. With regard to this fact, there is a great consent among observers; and it has been estimated that every poor person ill of fever, infects two or three.

One or two examples will illustrate the production of contagion from filth and confinement. I choose first extreme cases, but the conclusion as I will afterwards prove, may be

* I found that the pernicious effects of the variolous matter were limited to a very narrow sphere. In the open air and in moderate cases, I discovered that the infectious distance does not exceed half a yard. Hence it is probable that, even when the distemper is malignant, the infectious influence extends but to a few yards from the poison. I soon also discovered that the contagion of fevers is confined to a narrower sphere. (*Letter to Dr. Percival.* p. 8.)

extended, in proportion, to others similar in kind, but varying in degree. It is evident that where sloth and want of cleanliness prevail on board a ship, there the effects resulting from these causes, whatever they may be, will be most strongly experienced. The two following relations strikingly confirm this reflection.

The Hankey sailed from England in 1792, with upwards of two hundred people on board, partly settlers for the island of Bulama off the coast of Africa. Both the settlers and the crew were healthy at the commencement of the voyage, nor is there any suspicion of injury from the exhalations of unhealthy ground. For reasons, which it is not necessary to repeat here, the whole number of persons carried out were obliged to live on board throughout the rainy season, when the heat is excessive. They endeavoured to shelter themselves in the best manner they could by changing the ship into a wooden house. Her sides were raised and she was covered with a roof. In so confined a situation, cleanliness was scarcely practicable; and sometime after their arrival, a dangerous fever broke out. The ship was navigated by twelve healthy seamen, then taken on board for the first time, from Bulama to Bissao; and before her return, nine of these died. Three fourths of those on board perished at Bulama.

With much difficulty, they made a passage to St. Jago, where they were furnished with four seamen, and with this help, proceeded to the West-Indies. The four new hands were all infected; two died and the others were put on shore at Grenada and St. Vincent's, in the most wretched state imaginable. On arriving at Port St. George in Grenada, no care was taken to sweeten or ventilate the vessel; nor were the clothes and bedding of those who had died on board, destroyed. In consequence, the fever, which proved one of the most fatal disorders upon record, gradually spread from the Hankey to other ships up the harbour, and thence gained the island. Of 500 sailors employed in the regular trade, the almost incredible proportion of 200 perished between the beginning of March and the end of May. Twenty-six out of twenty seven recruits, who joined the artillery in July, were infected; and twenty-one died. Nor was it till the close of 1796, that this malignant fever disappeared altogether. During the interval, it seems highly probable that it spread to other places.

In this case, there seem to be circumstances of peculiar aggravation, if the virulence of contagion be in proportion to the intensity of the generating causes. Let us, therefore, take a view of other ships under different circum-

stances. " Several ships, which had carried
" flax-seed to Ireland, returned in June and
" July to New-York, crowded with needy and
" wretched emigrants from that island. They
" were so thick between decks, that the air
" was deprived of its usual portion of oxygen,
" insomuch that on bringing the sick passengers
" to shore, the common pure atmosphere was
" too stimulant for their lungs ; and a number
" of them gasped in it, and died in a short
" time. There was so much animal excrement
" accumulated in one of the ships, that the
" American health-officer detained her at the
" quarantine ground, as poisonous and pes-
" tilential, and refused to let her come up to
" the city. By the pukings and purgings—
" by the urinary and perspiratory discharges
" of these miserable creatures, literally wallow-
" ing in their own filth; the bodies of many
" of them were besmeared and incrusted,
" forming a layer of excrementitious grime
" from head to foot. Their cloathing and
" their bedding were impregnated with as
" much of these excrementitious matters as
" they could wipe from the bodies of the
" passengers and absorb. With such coverings,
" vile, offensive and pestilential in the highest
" degree, were they surrounded. And these
" excrements, infesting every thing in the

" neighbourhood of the sick, underwent the
" usual chemical changes, in a heat nearly or
" quite equal to the human body, and turned
" to - - - - some poisonous matter, which
" forms the exciting cause of fever. Of the
" fever so excited, between thirty and forty from
" one ship, died in crossing the Atlantic - - -
" The survivors arrived in a state of uncleanness,
" sickness and want, seldom seen in America,
" but among the emigrants from that unhappy
" country, who make so large a number of the
" poor in the American hospitals and alms-
" houses. So thoroughly contaminated with
" their own corrupting excretions, were the
" clothes and beds of these sufferers, that
" the - - - exhalations from them poisoned the
" air of the Marine hospital on Staten island,
" and the medical attendants and nurses
" sickened in the discharge of their humane
" attentions." *(New-York Med. Repository.*
Vol. 1. p. 70.*)*

The following fact, which we owe to Dr. Rollo, is more analogous to what happens in common life. " One man of the horse
" artillery was admitted into the hospital
" with a suspicious fever, next day another.
" This excited enquiry. It was found they
" came from two different barrack-rooms.
" These were followed by other men, in all

"amounting to eight: three of whom came "from a separate room; the rest from the "same rooms. The rooms were visited by "the commanding officer. All the rooms, "whence the infected men came, were "found to have entirely different bedding "from the rest of the barracks.—The horse "artillery being a corps in constant readi- "ness for service, and whose appointments "were always complete, had for conve- "nience of carriage hammock bedding. The "hammocks were rolled up tightly every "morning the moment the men rose; and "they were unloosed when they went into "them at night.—At this time, we had had "so much and so constant rain, that this "bedding had not been aired or opened, for "a single day, for at least two months. The "hammocks, with their bedding, were ex- "amined, and the moment they were opened "a very peculiar nauseating smell was per- "ceptible. Immediate steps were taken, and "no further mischief took place. Here, an "infectious fever evidently arose from the "confinement of the effluvia of a man's own "person, in a term of about two months." The measles and small-pox can almost always, directly or indirectly, be traced to persons who have had these distempers. But it is in

low fever in thousands of instances as above. The sickness of one patient cannot be traced to any sick predecessor. It is a strong confirmation of the independent production of this contagion, that similar fevers originate among animals closely crowded together, as among sheep and hogs on board ship. If pestilence follow famine with great regularity, it may be that the effluvia from an impoverished habit are more liable to the contagious fermentation, or that the debilitated are more readily infected by floating effluvia, or that famished human creatures have not spirit to keep themselves clean, and so filth accumulates unusually under distress. Though, "in ordinary times, we are assured that the lowest class do not put clean sheets on their beds thrice in the year; and that where no sheets are used, they never wash, or scour their blankets." (*Willan's reports*).

That intermittent and remittent fevers, in most cases, spring from marsh exhalations, the concurrence of innumerable observations compels us to believe. Though it be certain that other agents, as cold applied in a certain manner, will also produce perfect agues. But what substances precisely they are, which working together engender the noxious effluvia of marshy grounds, no in-

vestigation has yet gone near towards ascertaining. So it is with the poison that excites our continued fevers, commonly but perhaps not happily termed *low*, since their first stage is probably either violent stimulation, or that suppression of the powers, which is to stimulation what the effect of swallowing a prodigious quantity of diluted spirits at once, is to ordinary intoxication. This subtle and dangerous material appears to be oftenest formed when human beings are crowded together and covered or surrounded by filth. Observers have remarked with surprize that naked negroes, jammed close together during the middle passage, (as was the custom among the dealers in human flesh, when the slave-trade was carried on with all the inhumanity, of which the uncontrouled spirit of commerce is capable,) failed to produce it.

Agues prevail in spring and autumn. Malignant fevers have been often checked by great heat and cold. Can the fermentations, from which the *febri-facient* effluvia spring, proceed through a certain range of temperature only?

If we knew the nature of the process, we should at a glance see the shortest way how to prevent and stop it. If we knew the qualities of the product, we should have the same

advantage in setting about to change it. As the air has so much effect in rendering it innoxious, may one suppose it an oxydable substance? This would explain some of the phænomena better than any other conjecture. It would enable us to understand the security of a free atmosphere, and the danger from approaching patients in close rooms. Without this supposition, we may however distinguish the impropriety of the term *concentrated*, as applied to contagion in such situations. But by its help, the existence of it in its original state for want of the access of oxygen in the atmosphere surrounding the patient, and the danger of such an atmosphere become apparent. We can also better understand certain anomalies or extraordinary phænomena; and may also hope to reconcile the advocates for the narrow sphere of contagion in open places, and their opponents. When contagion settles on the clothes of a sick person, it probably assumes a more consolidated form than as it issues from the body:—in the latter it may be more expanded and more open to the action of the atmosphere. Many authors have observed that infection from clothes is more common than from contact or approach of the sick. But if the con-

tagion be more condensed in its state of adhesion to different substances, it becomes evident that it may be blown across a court of justice, unaltered and capable of infecting, though the rarer contagious halitus from a sick person cannot be transported in this manner. What dose of the poison is sufficient to infect has lately been brought into question, and even attempted to be determined by an ingenious writer, who yet confesses that "numerous examples - - - manifestly "prove that a short and probably a momen-"tary exposure to contagion, in some in-"stances excites a fever."—*(Dr. Haygarth's Letter to Dr. Percival,* p. 42.) But perhaps the variety of phænomena would be more easily understood from the decomposition or non-decomposition of the poison, as it is inhaled, and its incapacity to break the passing trains of action, before it is altered or the contrary.*

It will be allowed in the present state of our knowledge as nothing improbable, that febri-facient contagions consist of the same

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* If one could make experiments on such a subject, one need not despair of exciting trains of action, capable of preventing the inoculation from small-pox or cow-pox taking effect.

elements in different proportion, or perhaps with a slight addition in some cases. The variation in the morbid effects bespeak a variation in the constitution of the poison, though it must not be forgotten that difference of susceptibility will create the greatest diversity of effects. How different is the small-pox in different individuals inoculated with the same lancet! From a variety of observations, it would appear that the effluvia, which excite the small-pox, are much more widely diffused, other circumstances being equal, than those, from which our low fever springs. That is, according to the preceding supposition, they do not quite so readily combine with the oxygen of the atmosphere. It must not, in this place, be concealed that variolous matter in a liquid state does not soon lose its property of communicating the small-pox; and in a dry state it is found to resist the full action of the atmosphere for a long time, certainly for a month. "I have "tried" says Dr. CURRIE, "whether vario-"lous matter, exposed to the air, and indeed "to the wind, can communicate the disease "by inoculation, and the result has been as "I expected. The disease was communi-"cated with the usual certainty and success. "I inoculated three patients at the same time.

"in one the eruptive fever appeared on the "fifth day; in another, on the seventh; and "in the third, on the ninth. The matter "was spread on the surface of a piece of "window glass, and had been long perfectly "dry. It was discoloured by some smoke "and dust that the wind had blown over it. "I diluted it, as our practice is, with a few "drops of tepid water——Next day, the "glass was as dry as before, and the matter "unchanged as to appearance. It now lies "before me, and the eye can distinguish no "diminution of quantity—So far as to facts. "My opinion is, that I shall be able to ino-"culate with the same matter diluted in the "same way, many months or perhaps years "hence." These facts are not more unfavourable to the supposition that the air destroys contagion by acting as an oxygenant, than to any other hypothesis concerning its mode of operation. Where atmospheric air and acids perform a common office, we have few analogies, by which to conceive it, besides that of oxygenation. Marine acid may do this by the help of watry vapour. But whatever is the real alteration produced upon contagion, these reasonings will only require a change of terms. In all cases we must alike suppose that the

variolous effluvia, imbedded in purulent matter, are infinitely more protected from the action of the air, than as they issue from living surfaces. By an agent, much more powerful, under the present point of view, than atmospheric air, we know that liquid variolous matter may be very speedily deprived of its power to infect. Thus, Mr. CRUIKSHANK of Woolwich, in March 1795, took two portions of recent small-pox matter from the same person, and exposed one portion to oxygenated muriatic gas for a few minutes, and with it inoculated the left arms of three drummers, while the right arms were inoculated with some of the other portion. The punctures of the left arms had no marks of inflammation, except what simple puncture produces, and they entirely disappeared in a few days. But the right arms took on the variolous action, and in two of the persons there was a general eruption. The experiment, on repetition, was attended with the same result. (*Rollo on Diabetes, first ed.* p. 61.)

These experiments would probably have led, by analogy, to a method of destroying all sorts of febrile contagion, had not such a method been already discovered with regard to some. As it is, they admirably serve to remove any of those scruples, which might

have been left, where the infecting substance is not so palpable as variolous matter, and where, to common observers, the certainty of infection may not be deemed nearly so great as from the process of inoculation. Though in reality the contagion of typhus and of scarlet fever are as unfailing, when applied under favourable circumstances, as variolous matter, or variolous effluvia.

The series of observations, from which we seem entitled to draw the most important of all conclusions respecting the prevention of infection, viz. *that the contagion of low fever (and probably all contagions producing febrile disorders) may be destroyed in all their states by the fumes of some of the mineral acids; and that these fumes can be safely disseminated through the air of apartments, without removing the sick,* began with the celebrated chemist, M. de MORVEAU.

An attempt having been made to empty the vaults *(caves sepulchrales)* of the principal church of Dijon, there was discharged so great a quantity of putrid effluvia as to render it necessary to shut up the church; and it was the more urgent to destroy these effluvia in their source as they penetrated the neighbouring houses, where the symp-

toms of a contagious fever* are said to have appeared. After the vain trial of various perfumes, fumigations with aromatic vinegar, and the detonation of salt-petre, M. de Morveau, put six pounds of kitchen salt, a little moist, into a common garden bell, imbedded in a pot full of cold ashes, and placed it over a large chafing-dish. Upon the salt he poured two pounds of oil of vitriol and immediately quitted the church, the doors of which were shut. Next day the church was found perfectly sweet; and every one who entered it declared with astonishment that he should not have entertained a suspicion of its having been so lately filled with foul effluvia. Mr. Morveau was induced to use marine acid on account of its expansibility and of the striking manner, in which it unites to the fumes of volatile alkali. He remarks that the nitrous acid would have been more powerful than the detonation of nitre.‡ But in these first observations, as also

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* L'acide du nitre seroit plus puissant — — — — Pour purifier une masse d'air, il n'y a point une voie plus courte et plus sûre que de lâcher une acide, qui s'elevant et occupant tout l'espace, &c. &c.

‡ L'air surchargé d'exhalaisons putrides d'une odeur très-infecte, avoit causé a plusieurs personnes une mort prompte, à d'autres des maladies putrides dont elles moururent en peu de jours.

in his late work, he appears to have confounded two things essentially distinct; the offensive vapours that may accompany contagious effluvia, and these effluvia themselves, which have undoubtedly no odour, nor any quality by which they manifest themselves to the senses. This first experiment therefore could only be considered as a hopeful beginning.

In the same year, however, one of those fatal pestilences, known under the name of the *jail-fever*, broke out at Dijon; and the same method of purification was here executed with success. Notices of these transactions were published in the Philosophical Journal, which enjoyed the most extensive circulation in Europe (*Rozier, Observations sur la Physique*); and immediately afterwards popular publications by persons of the first intelligence and weight in France, recommended this method as alone to be depended upon for destroying the contagion both of the murrain among cattle and of low fever. In 1780, the Academy of Sciences being consulted by the late French government concerning the means of destroying infection in the gaols, appointed a committee for the purpose, on which stands the great name of Lavoisier. By this committee, the acid

vapours were also pointed out as more to be depended upon than any thing else (*See Morveau des moyens de prevenir la contagion* 1801, *or the English translation by Dr. Hall.*) But it does not appear that the extrication of acid fumes was precisely mentioned as an expedient that could safely be practised in inhabited rooms in any publication before 1794, when it was done in the most express terms by the French counsel of health, and enjoined, though ineffectually, under the most binding sanctions, by the legislature.—Two years before, the oxygenated marine acid was stated to be used in dissecting-rooms for destroying putrid smells.

At a later period the marine or oxygenated marine acid fumigations, have been practised with success in France, in Spain, and in our own admirably conducted military hospital at Woolwich.

In 1795, Dr. J. C. SMITH, proposed the fumes of nitrous acid for the destruction of contagion, and in the year following, a set of experiments conducted on ship-board, upon a very large scale, demonstrated the efficacy of the measure. On board the Union hospital ship, where a very fatal infectious fever was raging, not one of the crew was seized after the commencement of the fumigations. It is

hardly necessary to except one of the attendants, who had a slight relapse, in consequence of his own imprudence. Similar success so distinctly attended the experiment on board some of the Russian ships, that the admiral himself applied for a fresh stock of the materials, to be used on board the rest of that fleet. All these experiments, taken together, supply the only proof of the destruction of contagion, of which the nature of the subject admits. It is not the disappearance of any odour, upon which we can place the smallest reliance. The decisive fact is the immediate cessation of infection after the fumigations, without any other change in the circumstances, under which it was taking place.

The efficacy both of nitrous and marine acid fumigations being allowed, it becomes a question which of the two is preferable, in general or on given occasions. Mr. MORVEAU has raised two objections to those by nitrous acid. He endeavours to shew by experiment, that the vapours of nitrous acid deprive that portion of the atmosphere, through which they are diffused, of part of its oxygen, and that they have less expansive force. It has been shewn at large by Dr. ODIER of Geneva, that the first objection is groundles, the appearances by which it was suggested having solely arisen

from Mr. MORVEAU's defective manner of operating. The second objection is well founded in the abstract, but does not apply to the purpose in debate. The nitrous acid vapours are proved by the common process for distilling nitrous acid to be condensable without water, while those of the marine acid are not. The latter therefore will continue longer afloat and spread further. This, other things being alike, would, therefore, be undoubtedly preferable. But experiment has decided in favour of the sufficiency of nitrous acid fumes: and their advantage consists in their being generally little apt to provoke coughing, unless discharged in too dense a volume, and also in their being attended with but momentary inconvenience, and no danger, if this should happen.

PRACTICAL INFERENCES.

The method of preventing febrile infection, follows of itself from the preceding discussion. To speak strictly, indeed, it reduces itself to a single rule. *Destroy contagion by acid fumigations.* The fumes of nitrous acid are raised by throwing nitre into warm oil of vitriol. Let a little sand be warmed to somewhat above the heat of boiling water, that is, to a degree considerably beyond what the hand can bear.

In this sand, let a gallipot, containing an ounce of oil of vitriol, be imbedded. Then let the bowl of a tea spoon of nitre be dropped into the oil of vitriol. Let the mixture be stirred with a glass rod, or a dry stick or the barrel of a quill, well besmeared with bees wax. No metallic substance must be used in any of these processes. White fumes will be seen to ascend; and they will be sensible through a small room. A second spoonful may be required for a larger room. The measure is to be regulated by the effect. Few private houses have rooms so large that four tea-spoonfuls (half an ounce) of nitre, used at once, will not fill with fumes, too dense to be agreeable, particularly where the lungs are delicate. To fumigate thoroughly (which should be done once or twice in 24 hours,) the doors and windows should be shut. But a perpetual slow extrication of fumes is also desirable, since the contagion is perpetually generated. During this, however, the air should be freely admitted. The apparatus should be placed so near the patient, that the fumes may be just perceptible where he lies. The least practice will teach the regulation of the fumes. By throwing open a window and door, they can be lessened at once, when too strong.

When about twice the quantity of nitre has

been added to the oil of vitriol, it will expel no more fumes; and must therefore be changed.

Common salt may be used in the same way as nitre with oil of vitriol. But if the salt be well dried first, no heated sand will be necessary in the beginning; and afterwards it need not be so strongly heated.

It ought not to be concealed that the oxygenated muriatic acid, when too freely inspired, produces swooning, sneezing and a variety of disagreeable sensations. With the slightest discretion, however, it may be used for the prevention of infection; and there is only one precaution necessary, which I have found it easy to impress upon persons, perfectly unaccustomed to chemistry. It has the convenience of not requiring artificial heat; and I should undoubtedly prefer it to all known agents. Dr. ROLLO, in his excellent *account of the royal artillery hospital, at Woolwich*, directs, on the authority of Mr. CRUIKSHANK, as follows; "Take of pulverized manganese two "parts—of common salt four parts—of oil of "vitriol three parts—of water one part— "When a patient is admitted with an infectious "disease, or where there are patients with "sores having offensive discharges, one or two "gallypots are placed in the wards, with about "three ounces of the manganese and salt, to

"which is added half an ounce of water, and "then is gradually poured on the whole, a part "of the ounce of oil of vitriol; the remainder "occasionally. These quantities answer to "the consumption of a day. A pot or two is "also placed on the outside of the doors of the "same wards, in the gallery. The vapour is "diffused over the whole ward and penetrates "every where, and destroys every other smell "than what itself conveys." M. MORVEAU gives the following proportions as preferable, though only on the score of œconomy: *common salt ten parts,—manganese two parts,—water four, and oil of vitriol, six parts.* If therefore we weigh out five drams of common salt, one of powdered manganese, and mix them in a mortar, and add two of water; and from a bottle containing three drams of oil of vitriol, add about a sixth part, and so on through the day, this will be sufficient to destroy contagion, for so long, in a moderate sized apartment. The vessel containing the manganese, may be at first placed in a remote part of the room, till the attendants on the sick be familiarized with the fumes and the rate of their extrication. Between the times of adding oil of vitriol, the mixture may be stirred with glass or waxed wood, whenever the extrication of fumes appears too slack.

For those who are to handle the sick, particularly in cases of the scarlet fever, it may not be a superfluous care to wash the mouth and hands, and to wet the inside of the nostrils with vitriolic, nitrous or marine acids, sufficiently diluted to be agreeable. Where glazed dresses are used to protect the skin, the mucous membrane will be liable to the effluvia; these surfaces being probably much more susceptible of contagious impressions, than those which are covered by the cuticle.

Every thing that has been in contact with the patient, as foul linen, should be thrown into water slightly acidulated with one of these acids. And where it can be conveniently done, all the evacuations of the sick should be received into acidulated water. In short, the acids should be as freely used as possible in every circumstance, belonging to persons, affected with contagious febrile disorders.

With respect to other substances, which have been used at various times as anti-contagious, such as incense, camphor, the smoke of tobacco, whatever effect they may have in rendering smells less offensive, experience has amply shewn that they are destitute of of power to destroy contagion. Of course, they could afford no security.

It may here too be noted as a dangerous error, that free use of port wine is a protection against infection during the reign of an epidemic. It is true that *habitual* drunkards have been sometimes said to escape the action of contagion, when it was fully exerted upon others. But occasional free use of wine so as to produce subsequent weakness, appears to increase susceptibility. In the fevers of our climate, the rule seems to be, that whatever enfeebles brings with it danger of infection. It has been remarked by the most experienced and intelligent observers that persons, slightly exposed to contagion, do not suffer, when afterwards exempt from debilitating causes, whereas otherwise they do. During convalescence, a relapse is occasioned by these causes. It is remarked by Dr. LIND, and the observation is strictly applicable to those that seek an excuse for indulgence in wine, that sailors after having committed such excess in drinking on shore as produced feverishness, did not return to their former health as usual, but that their feverishness put on the precise form of the contagious fever raging on board the ship. Dr. CHISHOLM found that persons, most given to the abuse of intoxicating liquors, were most liable to the malignant pestilential fever at

Grenada. There need not therefore be any particular course of regimen during the rage of fevers, than what prudence enjoins at all seasons. Intemperance and abstemiousness are alike to be shunned.

Contact of the patient himself, inhaling an atmosphere, that retains full force to infect, and the use of apparel or furniture, on which the poisonous effluvia have settled, are the grand means, by which febrile diseases are propagated. Hence, besides the necessity of airing or fumigating articles, which have touched or been near the patient, arises the propriety of excluding all persons from the sick chamber, except the necessary attendants. Even under the security of the measures above described, this rule should be sacredly observed. For not only is exemption from dangerous diseases a case, in which one would "make assurance double "sure;" but it is here in some measure as on board a ship in distress. Nothing can be so unfavourable to the regular performance of the offices required by the sick, as a promiscuous concourse, and the admixture of useless hands among those, who are occupied in their proper sphere. This restriction, however, is not to be construed to the exclusion

either of a friend, whose presence is thought likely to check the agitations of delirium or of occasional assistants, where additional strength is needed. It has already appeared how small is the danger of infection in the spacious apartments of the wealthy, without a neglect of ventilation, too gross to be conceived possible in the present day under the superintendance of any medical man, or indeed in a family, possessed of the most moderate degree of intelligence*. Separation of the sick is what the condition of the poorer part of the community has long loudly called for. The call has been answered in a variety of places, for example, at Chester, Edinburgh, Manchester, Liverpool, Dublin, London, Cork, Newcastle, Waterford, Etruria. In these places wards in the infirmary have been set apart for the reception of patients, ill of fever; or distinct buildings have been

* In genteel houses I now frequently observe the contrary error, as people are apt to fly from one extreme into another. But it is a great deal more than unnecessary to invite the damps of November, through the wide-open windows, into apartments, too chilly at that season, though close shut up. It would be infinitely better to have recourse to the agent, by which pestilence has been heretofore vainly opposed: I need not say that fires should not be so fierce as those used to dissipate contagion; sufficient directions having been given, respecting the temperature of apartments.

erected or are now erecting*. In Staffordshire, the working potters themselves have contributed from their wages towards the building and the current expences of the institution. It would be highly desirable that in other places labourers, that can afford a halfpenny a week, (which is the sum contributed by the potters,) should be, in the same manner, induced to take an interest in the design. One may also hope that the incontrovertible proofs of its utility and the example of these poor manufacturers will, at length, rouse the magistrates of all our towns to assist in stopping the pestilence,

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* The caprice of fortune seems to me very striking in respect to those, who have laboured to prevent infection. Dr. J. C. SMYTH, deserves much commendation, doubtless, for prosecuting the acid fumigations. Yet the most obvious analogy pointed out the use of nitre in place of common salt; and the nitrous acid was indicated by M. MORVEAU, in his first paper. Dr. SMYTH, however, has been lucky enough to be thought worthy of a national recompence, amounting to half the value of that bestowed on the introducer of the cow-pock inoculation. On the other hand, no public notice has been taken of the persons, who carried into effect the scheme of preventing infection by separation. Yet who will deny that *they* had infinitely more call for exertion of mind, and an infinitely harder conflict with prejudice to sustain? Hitherto, I fancy, they have likewise saved five hundred times as many lives.

which has been and is raging around them on all sides.

The benefits attending *houses of recovery*, into which persons affected by fever are to be carried as soon as the attack is discovered, have been ably pointed out in so many publications, calculated for extra-professional circulation, that I shall but just touch upon the subject here.* These structures accomplish two great objects. 1. *They save a number of the diseased that must otherwise perish.* During the prevalence of some epidemics, one in four of all the poor, affected with fever, have been stated to perish.‡ In London, to which the account refers, the accumulation of human beings sometimes seems almost to equal any thing on board slave-ships before the new regulations. From three to eight miserable creatures of different ages, occupy a single bed in a damp, dismal, close and filthy apartment. And it is remarked that "where two "or more persons are confined to one bed by "a fever at the same time, it almost invari-"ably happens that at least one of them "sinks under the disease." (*Murray's re-*

* See Dr. STANGER on *contagious fever in the metropolis*, and the various writers named by him.

‡ Dr. WILLAN's reports on the diseases of London for March, 1800.

marks on the poor of the metropolis.) In habitations, a degree less wretched, every sort of want—the want of air—the want of all the conveniences that have been devised for the comfort of the sick—the want of regularity in administering any medicines that may be supplied—the want of address in relieving the incidental distresses of the sick, and above all, the want of hopé, so common among the indigent in their best health and so constant under disease, must occasion a most disproportionate mortality. "I have known," says Dr. FERRIAR, "nine patients in fever, crammed into three small dirty rooms, without "the regular attendance of any friend or of "a nurse. Four of these poor creatures died "—absolutely from the want of the common "offices of humanity and neglect in the administration of their medicines." The author of this essay stated to the Mayor of Bristol on good authority that eight persons were last year buried out of one house in that city from fever. And yet to listen to vulgar opinion in the place, Bristol is a place peculiarly healthy.*

* Those who disbelieve the accounts of last year from the Dispensary (thought dreadful even in London) and what I stated, may now convince themselves that *low fever can infest Bristol* by exploring St. Phillips'. Low fever exists in various other parts.

Such is the fate of the poor left to their own situation, and to their own care. In the house of recovery at Manchester, it results from the experience of years that a larger proportion recover than of private patients with all the accommodations that wealth can command. So decisive is the superiority of a well-combined system, regularly carried into effect! Such the chance in favour of the sick, when protected against the interference of gossips, who go about dispensing prejudice and death.

2. *The second and greatest benefit from houses of recovery is the prevention of infection.* The extent of this benefit may be, in part, appreciated from the preceding comparison between the dissemination of contagion in large and small, in airy and close apartments. But the progress of fevers among the poor is greater than can be imagined, without reference to the testimony of eye-witnesses on this head. When once introduced into the abodes of this class, fever travels with fatal certainty from individual to individual, from chamber to chamber, from floor to floor, till all is infected from the cellar below to the garret above. It not only reaches to every corps of inmates at one time, but for months together seizes the families that succeed those

that have been destroyed or disabled. Dr. FERRIAR was told by an elderly woman, that she had fifteen children, all settled in Manchester, and that all had undergone the fever within two months. The most thinly inhabited parts of the island have very little the advantage, in this respect, over the metropolis and over great manufacturing towns. In the country, a concourse of idly curious visitors nearly compensates for the moisture, darkness, and confinement of city cellars. Those, to whom the observation has not occurred, will find in a vast variety of the reports from the Scotch ministers, as published by Sir JOHN SINCLAIR, that the neighbours flock to a house, where the fever is, with as much eagerness as their superiors to a place of public amusement. So it is in country-places in England. In such places indeed they can, at present, only be admonished of the risk they themselves run, and of the mischief they do the sick. At most, the preservative of acid fumigation may be introduced by the better-informed residents. Though there is no reason why houses of recovery should not be introduced into every parish at all populous, or into an union of parishes, where the population is less. Indeed, upon the evidence already accumulated*, it

* It should be stated, that the opponents of Dr. CLARKE

may be asserted that the legislature could not do a more beneficent and œconomical act than to compel a general establishment of these asylums. In all epidemics, great terror, if nothing worse, is carried into the bosom of opulent families by servants who have caught the disorder among poor acquaintances; and when the contagion is rife among the washerwomen of a town, as it is very apt to be, the apparel that has passed through their hands becomes dangerous, and the poisoned shirt of NESSUS ceases to be a fable.

That, in the present state of society, houses of recovery afford the only sure means of arresting the progress of infection by affording an opportunity to purify the habitations of the poor, is too obvious to require an explanation. The fever is not only, in many cases, communicated to other members, before the uninformed patient or his friends have any suspicion of its nature; but the apparel, the bed-clothes, the walls, and various articles of

at Newcastle coincided with him as to the utility of a house of recovery. They are now, I am informed, zealously labouring to raise funds for the erection of one. They objected to the situation near the infirmary, where almost all medical men think it would do much the most good. And the sum necessary for a new structure would have been saved; and what services might this sum not have rendered to Newcastle and the environs, in the hands of a board of health?

the scanty household, have received the contamination. Here is a stock of contagion, ready to continue the distemper for an indefinite time without interruption, or to give rise to it at some future period, as accident shall dispose.

The importance of removing the first person in a family, affected by fever, and of purifying the habitation and its contents, (a care that certainly cannot be confided to the poor themselves,) has suggested the idea of medical associations, whose office it is to superintend these objects, and whatever else relates to the prevention of infection. The success which has attended the endeavours of that established in Manchester, has left no doubt with intelligent judges, of the possibility of the total extinction of contagion, and of the very easy practicability of reducing its ravages within a narrow compass.

SCARLET FEVER, with Sore Throat.

Whatever may be the comparative exemption of the opulent from low or typhus fever, there is another species of contagion which they have much cause to dread. It is that which in its virulent form produces the most suddenly fatal of all our infectious disorders. It sometimes destroys in two or three days after the breaking

out of the symptoms. I was once desired on a Saturday, to see a little boy affected with this complaint, and found him dying. Passing the same way on the next Monday evening, I called to enquire after the mother, and was told that a girl, whom I had seen on the first visit apparently in good health, had been seized and died in the interval. I have known other cases, almost as quickly fatal; and every physician, who has had much experience of scarlet fever, must have met with analogous examples. Another important fact, relative to this dangerous disorder, is that it is excessively infectious, and I believe that most medical practitioners would be ready to attest of the scarlatina exactly the contrary of what has been stated above, concerning typhus. If in spacious and airy apartments, the one is seldom known to be communicated, the other scarce ever fails to spread. The following are the ideas of Dr. CLARKE, on the best means of proceeding for putting an end to the depredations of scarlet fever. The reflections of so judicious and experienced an observer of diseases, cannot be too widely disseminated.

He supposes a board of health established. This board, he proceeds, "should not limit its "efforts to the extermination of typhus con-"tagion, but also extend them to the preven-

" tion of the casual small-pox, and of the " scarlet fever, attended with sore throat.— " - - - - - - By extending the rules of pre- " vention to the scarlet fever, and consequently " checking its progress, the lives of the chil- " dren of the middle and higher orders of " society, in large towns and in their vicinity, " will be preserved; who, at present, suffer " ten times more from this, than from any " typhus contagion.*

" The small additional expence of carrying " rules of prevention for the small-pox and " scarlet fever into execution, will scarce merit " the consideration of any board of health. " But a house of reception for poor patients, " labouring under scarlet fever, though ex- " pensive, would be attended with the great " advantage of securing cities and populous

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* Dr. CLARKE was undoubtedly careful of exaggerating. Otherwise he might have stated a much higher proportion. In this part of England, at least, I suspect that from thirty to fifty times as many members of opulent families are affected by scarlatina, as by typhus: and adults as well as children.— One morning, some years ago, on setting out on a distant journey, I met Mr. K. a member of the Irish parliament, who shewed me in his hand, with great glee, the report of the Irish house of lords on the united Irish, and appeared perfectly well. The first news I heard on my return, was that he was dead of scarlet fever, and that it was spreading. Persons, then residing at Clifton, will remember the incident.

"towns from the destructive ravages of this "disease. Such a separate house for this complaint, therefore, as soon the funds of established boards of health will permit, should "be annexed to fever wards; taking care, at "the same time, to guard against the intermixture of the respective patients, of clothes "and of servants.

"But it will be proper, in this place, to "observe, that no single house for the reception of scarlet fever, will be found adequate "for the compleat prevention of this disease; "because the subjects of it are generally "young children, nay, often infants at the "breast. To prevent this disease, therefore, "from spreading, it will be in general, necessary to remove the whole family, which "would soon fill one house of reception. A "range of neat small houses, containing rooms "with opposite windows, for the reception of "poor families in succession, sending the "families back to their own purified habitations, as soon as the distemper is over.

"Rooms of this kind for the reception of "whole families, employed at the breaking "out of the scarlet fever, together with the "house already mentioned to be annexed to "fever wards, for the admission of the *first* "patient seized in a poor habitation, would

"effectually extinguish the disease; and it "would be the interest of parishes to build,* "and keep in readiness, such a range of "houses." (*Supplement to collection of papers*, ps. 142—144.)

The greater the danger and fatality from the contagion of scarlet fever, with the more assiduity should fumigations, the other great preservative, be employed. That it will, in this case, be effectual, has not been demon-

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* That parishes would find it their *pecuniary* interest to raise buildings for the recovery of their sick poor, may sound to some like a projector's paradox. And, in fact, if the scheme required a considerable uncompensated expence in addition to the burdens imposed by the poor-laws and the exhausting demands of government, the objection would be very formidable. But the parochial savings would soon much more than pay the interest of the capital, expended in building. Grown people suffer from low fever in greater proportion than children, and more men die than women. In the great epidemic at and near Lancaster, Dr. CAMPBELL observed that of men 1 died in 8; of women 1 in 19; of children 1 in 80. The death of the father therefore, which is always the more probable event, throws the family upon the parish. What a noble example, if a company of rich men, upon having secured to them the average annual charges from low fevers and their consequences, would undertake to establish houses of recovery! To demonstrate that these charges would more than pay the interest of the money expended in the building and the current cost of the establishment, would be to secure their erection every where!

strated by experiments on so large a scale, and so frequently repeated. But during the prevalence of febrile diseases of late years, among which the scarlatina has often made its appearance, I have known the oxygenated muriatic acid used; with this proof of its favour, that the infection has not spread under the circumstances in which it usually does without this precaution. Some experienced physicians have believed that scarlatina anginosa and malignant sore throat are varieties of the same disease. It is certain that the nature of the general affection is similar to that in low fever, if this be any indication of a similarity in the nature of the exciting cause.—And as the alterative power of the acid vapours has been found by precise experiments to extend to small-pox as well as typhus, we may, I think, rely upon it, that it will not fail us in either of the two former complaints.

It will, doubtless, be a part of the business of medical boards, as well as private practitioners, to determine the power of this cheap and simple method of destroying contagion not only in febrile contagious disorders, but in others not essentially so, as chin-cough. When society shall have acquired thorough confidence in their agency and perfect familiarity with their use, they

must, of necessity, supersede houses of recovery. But the capital, that may have been laid out upon these edifices will not have been wasted; as they will be easily convertible to other public or to private purposes. Their general introduction will be attended with this other inestimable advantage, that it will create a spirit of vigilance to the earliest tokens of the operation of contagion, and dispose families, who have no occasion to send their sick members abroad for a cure or for the sake of stopping the dissemination of disease, to follow all the approved directions with stricter punctuality.

One very happy effect upon the general conduct of the poor at Manchester has been observed from the interposition of the board of health. By the purification of houses, out of which fever-patients have been removed, a disposition to cleanliness has been introduced. The inhabitants doubtless feeling more chearful and comfortable in their white-washed and sweetened apartments, exerted themselves to prevent a relapse into their former foul and dismal condition. So far we have a security against the future production of contagion; and those among the poor, who acquire a taste for cleanliness, will not be long before they acquire regular and sober habits.

Extension of the Plan for preventing Infection.

It is held by many that *efforts in the cause of truth are never lost*; and it must be owned that what has been done with a view to oppose the propagation of contagion tends powerfully to corroborate this opinion. Twenty years have not yet elapsed since fever-wards were first set apart in England for this purpose; and the plan of fever-houses has spread from the provinces to the metropolis, from which advantageous station they promise to extend in all directions. Wherever the question of their utility has been agitated, there the discussion has terminated compleatly in their favour, and been followed up by practical measures.

Without question, if the spirit that has been thus excited, and that seems to me to involve more of wisdom and humanity, than have ever before been combined by men acting in concert, shall receive a proper direction, its good effects will not stop at febrile infectious diseases. Other acute diseases may become objects of the attention of boards of health, and in certain cases, those who suffer from them should be equally removed from infected houses. Otherwise not only will one main intention of the establishment be de-

feated; but the most valuable lives in a family be lost, while the least so are preserved. The greatest prevalence of low fever frequently occurs, when catarrhs, pleurisy, and rheumatism are most common. Though contagion be in his house, (whether of generation previous to disease or issuing from the infected), the healthy labourer shall resist: but no sooner is he debilitated by one of these other complaints than the same cause, which he before withstood, shall make a fatal impression.* Of course, the patient must be removed to a healthy atmosphere, or the contagion by which he is encompased must be destroyed.

But experience will soon suggest this and other smaller improvements. It is of more consequence to extend the views of the sup-

* Persons residing in infected apartments, sometimes by means of fresh air and the exercise of the day, continue long unaffected by contagion. But if through taking cold or any other cause, they should be confined to the house for some days, they assuredly take the fever. So it happened in the late unfavourable season. Whoever was obliged to keep his bed for a catarrh, pleurisy or inflammation of the lungs, within three or four days caught the fever; and almost every one so affected, died. The children are infected from the new source of contagion; and the mother, after closing the eyes of her husband, and perhaps of more than one of her offspring, sinks exhausted with grief, watching and fatigue, and is herself the last victim to the disease. (*Willan's reports.*)

porters of these institutions to the prevention of chronic diseases also, by which such a portion of mortality and misery are occasioned among the poor, as there must be an universal wish to see diminished. The expence and trouble, necessary to this, will make a very inconsiderable addition to the expence and trouble, inseparable from the management of a house of recovery, though the two designs may be carried on apart. The convenience of their combination will consist in this. To a house of recovery, a medical officer will be necessary, whose business it shall be to examine at their own habitations such patients as are proposed for admission, and likewise after the removal of the patients, to superintend the execution of the measures necessary for checking the progress of contagion, and preventing the renewal of its effects; such as fumigations, cleansing and white-washing the apartments; fumigating the apparel and bed clothes, and securing their destruction, if this, now we have the knowledge of the power of the acids, shall be ever necessary. Wherever this officer is called, he may at the same visit ascertain the state of the family as to chronic ailments. They are often apparent at a glance.

I shall not attempt a delineation of the wretchedness, arising among the poor from

the frequency of disorders of this class. By their designation they are permanent, often lingering for years; and it is probable that they produce upon the whole a sum of pain, even more considerable, than acute diseases.— The bills of mortality attest to what a degree they are destructive. Their prevalence is beyond the conception of persons, not accustomed to the actual inspection of the poor with medical views. I do not think it too high to estimate that of *every five labourers' families where there are both parents and children, in three out of the five more than one individual will be found to suffer from some lingering malady*, DRYDEN says of his "somewhat old and very poor" widow—

> Her poverty was glad; her heart content,
> Nor knew she what the spleen or vapours meant.

But of such poverty, certain great statesmen, with whom we have been blest since DRYDEN's time, have nearly rid the land. I remember to have seen some remains of it in my youth. I meet with it no longer. From a good deal of observation and enquiry in different districts, I incline to think that a poor family of any size, where father, mother, son or daughter are not sorely harassed or dangerously affected with one or other of the following chronic disorders, is among the rarities of society:

Hysteria or the like.
Indigestion.
Chlorosis or some female complaint
Rheumatism.
Consumption incipient or confirmed.
Scrophula in its various shapes.

Now, except in far advanced consumption or schrophula, simple treatment is found almost invariably efficacious, notwithstanding the disadvantages under which the poor labour, particularly in the article of diet. How desirable then that these complaints should be detected in their nascent state, in which they are, for the most part, exceedingly obvious to an experienced eye! The principal thing necessary, therefore, is to provide for a regular domestic survey of the poor, or to fix upon some place, where parents might attend with their children at stated times. To this I am persuaded that many of them may easily be induced, for the dire distress, under which they have, of late, been labouring, seems to have had the effect of rendering them more tractable—just as a deep snow tames the birds of the air. A little conversation would, I believe, induce many to make a better disposal of their earnings in the purchase of articles of food. Tea, for example, they unanimously declare to be their only

remaining comfort. They drink it twice or thrice a day. Now "the popular use of this "herb not only precludes the possibility of "purchasing more solid food, but actually "renders the stomach incapable of digesting "a more nutritious diet." *(Dr. Barry's report relative to the Cork house of recovery).* And, on these grounds, unless they practice the grossest deception, I have often succeeded in persuading them to lay it aside.

The expence of a regular system of inspection and of remedies for chronic disorders, taken when they are so distinct as to be perfectly cognizable, but before they have taken root, would be a most trifling object. From having paid the bills for drugs for a considerable number of poor chronic patients in and about Bristol, I should estimate that four hundred guineas annually would be fully enough to do the same for all such patients in the city, and for all too, that could attend at any place in it from the environs.

How advantageous to the rich would be the establishment of such a plan, in rendering the medical practitioner more familiar with the early appearance and treatment of the very complaints, to which *they* and their children are particularly subject!

ENLARGEMENT and ORGANIZATION of the preceding PLAN.

Whoever is capable of taking a comprehensive view of the great and precious, but neglected, art of PREVENTIVE MEDICINE, would desire still to reduce into order and to convert to use, many things, of which society, at present, profits or otherwise, according as chance disposes the will or abilities of individuals. It is not enough to form medical associations for the prevention of febrile infection, and for the suppression of chronic disorders on their first formation, in particular. There is wanting a general co-oporation both for these and other objects. Nor do I see in what respect the title of medicine to a national establishment, is inferior to that of agriculture. The public health appears to have as fair claims to regard, as the public sustenance. The outlines of an effectual system for the ascertainment of the state of the public health, and for its preservation, will readily occur to every person, acquainted with the established forms for conducting the great affairs of mankind. Particular regulations will present themselves as soon as the execution of the scheme shall be set about in earnest.

In the first place, it is obvious that a board must be established in the metropolis, and that there must be other boards in cities, towns and country districts, with which the first is regularly to communicate. The conduct of the business must be entrusted to select individuals, but admission to the place of meeting should be free, at stated times, to members of the medical profession

without exception; and all should be invited to give information in writing, when they could not attend. A digest of the whole ought to be annually published. Should a particular emergency demand an extraordinary report, the materials would be at hand. By such an arrangement, the execution, the success, and the comparative merit of the different means of suppressing contagion and chronic disorders would come before the public; and undeniable improvements would pass with expedition from place to place. At present, the rate at which they travel, is woefully slow, and thousands perish in the mean time. For if the plan for a *fever-house* hardly reached Liverpool from Manchester in six years, how long will it be in getting to Bristol, whither the roads for useful public designs have, in all ages, been said to be heavy?

It should be among the principal cares of a national system of medical boards, to extract, from charitable institutions for the relief of the indigent sick, a quantity of medical knowledge, and by consequence, of public benefit, which hitherto they have never yielded.

By the same means, too, I conceive that the various resources, existing out of the profession and at present yielding nothing, would be called into effect. In order to illustrate this observation, I extract a passage from a paper, formerly inserted in a work of more limited circulation than the present essays. *(West-country contributions, 1799.)*

"The medical functionaries of hospitals should be required at fixed, perhaps monthly, periods, to furnish an account of their respective

departments, particularly noticing such phænomena, as should appear to them instructive or singular. To these meetings all the practitioners of the place and neighbourhood; together with the subscribers to the charity, should have free access. When the statement contained any thing uncommonly interesting, a commissioner or committee of verification, should be appointed to examine the circumstances. In cases, not admitting of delay, the attending physician or surgeon should call in one or more commissioners in the intervals of the sitting." - -

"After considering the stake which society has in medicine, how often in a man's life it may, according to its power and administration, wound or soothe his personal feelings and his sympathies, let him imagine himself present at one of these sittings, where the business is carried on with a spirit adequate to its importance. What motives for self congratulation and for congratulating his whole species, will the scene before him offer! The art of most immediate and most universal concern drawn out of its present darkness, in which none can distinguish whom it preserves and whom it destroys! its doubts solved! its contradictions reconciled! the cause of phænomena, where ease and existence are at issue, detected! light and order suddenly spread through trains of ideas that had long been vainly struggling in the mind of the ingenious! the stores of the most abounding in knowledge augmented! the faculties of the most acute sharpened! the interest of all classes promoted! the fortunate son of Esculapius, retiring with better informed judgment to the mansions of the opulent! the

humbler practitioner carrying away comfort to the peasant and the pauper!"

"Europe abounds in private medical societies. It abounds in philosophical societies, pursuing with success every species of knowledge, but that most worthy the curiosity of the philosopher, the knowledge of man. These are the disjoined elements of the association here suggested." - - - -

"As medical philosophy gains more of the public attention, medical practitioners will become more and more the devoted servants of their art. Such as is the community, such will ever be medicine. The more intelligence in the first, the less intrigue, the less quackery, the less helplessness in the last. - - - - It is often the consciousness of the part mankind take in their exertions that stimulates the soldier in the field and the orator in the council. Under the same powerful motive the physician would also perform wonders." - - - - -

"I shall perhaps be told that our hospitals are already on the best footing and in the ablest hands, and that every thing useful to the present age and to posterity, will be recorded: consequently that no good can arise from the cumbersome regulations I propose. But I, who can name a variety of hospitals, which in a long course of years have furnished nothing or next to nothing to medical philosophy, must be slow to believe in this universal vigilance. To many of our predecessors and to many of our contemporaries, the healing art is deeply indebted for what they have recorded of their hospital practice. Nor would I desire a more conclusive argument.

For if a part is so valuable, what would the whole be? And what, according to a just estimation, are the facts that have been preserved, but fragments of a mighty wreck, demonstrating the value of the mass that has perished."

To lose one useful fact, may be to lose many lives. And does not ten thousand times more valuable information perish than is preserved? and all for want of a combination among the theatres of disease, and of a great commanding station, a national bank of medical wealth, where the private practitioner may deposit his gains of knowledge, and draw out, in return, the whole stock, accumulated by his contemporaries? In the late controversy, it was publickly declared on high authority that the infirmary at Newcastle was in a state of disorganization; and I wonder how many of our infirmaries are in the best possible state of organization. It is too obvious to require proof that the plan which brings forth, for the use of the public, all the instruction these institutions can supply, must secure to their inhabitants, the best treatment in every sense of the word—particularly if the present paralysing system of permanency in the medical functionaries be abolished, and a rotation, at due intervals, introduced in its stead.*

* The plan of the *cancer-institution*, proposes "*that a physician and surgeon be elected, not for life, but for three, five, or seven years.*" It is to be hoped that in an enlightened age, no new medical establishment will tolerate the plan of perpetuity. Objections have been drawn from the abuse of the rotation-scheme, against the thing itself. The objectors have not appeared to comprehend that there is a medium between a stagnant pond and a torrent.

But *the expence! the danger of a job!*—the expence! What expence? the expence of a few thousand pounds a year for the greatest benefit that can be conferred on a people, from whom so many millions are drawn! It has been frequently said that this and that destructive disorder might be extirpated if a co-operation between governments could be attained. But of co-operation to so beneficent a purpose, there was no hope. Let the reader determine if this were a libel on governments. But whatever indifference statesmen may have towards doing good for its own sake, one would suppose that they would not be disinclined to procure for the people, at the people's own expence, a blessing, which being continually felt, and requiring no hour-long harangues to prove it such, would ensure the public gratitude to the authors —a thing particularly desirable at present, when society has been rocking like a vessel in a storm to the immiment hazard of the pilot.

But the other rub—*the job!* Against that, provision must be made by the nature of the regulations. Let there be none but moderate salaries, for hard-working clerks. The rest ought to be done from affection for the art. Those men are not worthy to be entrusted with the health of others, who will not *give* so much pains for the chance of learning how better to execute their trust. Nor can it be doubted that men, who will, can be found. During the late war, how many army physicians, in addition to their exhausting official duties, have preferred the labour of minuting down the occurrences among their sick, to that sleep, for which nature so loudly cried!—The spirit of our profession is little

of a sinecure spirit. And, for the sake of the health and happiness of my brethren, I hope we shall long be content to relinquish this spirit to our betters.

With these suggestions I take my leave of an engagement, which nothing but the perpetual spectacle of the fatal effects, arising from domestic errors in every part of the country, and the hope of paving the way for more salutary practices could have induced me to undertake. From my previous professional avocations, I had no right to calculate upon the frequent and continued interruptions to which I have actually been subject. From circumstances, many of which I could not controul, the author and the printer set to work nearly at the same instant. Hence the month, previous to the publication of each number, was the utmost space allotted for preparing it; and from this, in almost every instance, distant journeys have subtracted a fourth. Such is the cause of much want of arrangement, of frequent obscurities, and many inelegancies. I know not if it will serve as their excuse. To my own palate, I confess, even, in the passages I least disapprove—

Inest amari aliquid, quod ipsis in floribus angit.

I will not, however, conceal that I often purposely deviate from a style, which I consider as suited only to the squeamish taste of an enervated age. Should improving science, as I hope, and in particular the

s'ience of human nature, restore to us the blessing of intellectual health, the niceties of those compositions, over which the artist and the amateur hang till they both sicken, may come to be referred to one class with the quaintnesses of the literary age that preceded SWIFT and ADDISON. Even in the periods ROBERTSON and GIBBON, there may, hereafter, be discovered exactly the kind of fault that disgusted the poet in TIMON'S villa—

> Grove nods at grove, each alley has a brother,
> And half the platform just reflects the other.

Wherever I could find or recollect ideas suitable to my purpose, I have freely seized them by a right, I believe, universally acknowledged to reside in the authors of ele-entary treatises. For I too had to deliver the elements of the most important of arts, amely, *that of living*. In such an arena, it would have been the idlest of all vanities to attempt a display of the talent of originality. Indeed, where they equally suited my pur-se, I preferred facts from the experience f others, as supposing they would carry with hem superior authority.—Many of our lite-ry connoisseurs have imbibed a strong dis-ke of the productions of the German pres ad our vile translations of vile origina must inevitably create this feeling. Indeed, in the *belles lettres* very few of their authors will please readers familiar with those of e nt Greece and Rome, and with the best of dern Italy, France, and England. But their compilations are convenient, and their

collections of original facts beginning to be really valuable to those, who wi[ll] be a[t] the pains to sift them. No other nation [is] equally attentive to accumulate med[ic]al materials. Nor, with the exception of a REIL and one or two other individuals, does any nation turn them to so little account. I know not whether I shall be [fou]nd to have refined any of their ore, [or] to have transmuted German lead into a nobler met[al]. —In medical manuals for families their lan guage abounds as it does in all other sorts o[f] manuals. I should be glad, however, if any body would point me out one, in which the materials are wrought up in a manner, really fit for the service of families in this or indeed in any country. My search has been pretty extensive but vain. Yet this is the chief or rather the only merit of such performance[s].

I ought, indeed, to except one point, and that among the most important, and certainl[y] beyond comparison, the most delicate of all. The reader will be at no loss to guess what point I mean. Here I found precious instruc tion both in respect to facts and their ap[pli]cation, together with an encouraging coin cidence in sentiment. I did not find these [h]elps in the writings of physicians, but of [per]sons long devoted to education on the [a]mplest scale, [and] with an assiduity, which forsakes not the pupil at the school-door or as soon as the cloth is drawn, but pursues him in his recreations and to his repose, ascer- tains his solitary habits, and refuses to leav[e] even his inmost sentiments undetected.

What I have written upon this point has brought me so much fresh information, as